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ARMY TROOP SUPPORT AND AVIATION MATERIEL READINESS CO--ETC F/G 10/2
HISTORICAL ESCALATION OF OPERATION AND MAINTENANCE COSTS FOR FI--ETC(U)
JUL 78 W H GILLE
TSARCOM-TR-78-7.

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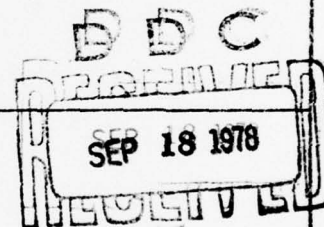
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report updates the costs developed for Operating and Maintaining Generator Sets established by the Cost Estimating Relationships (CER'S) in TROSCOM Technical Report 74-12. The methodology employed is based on ratio and proportion analysis, wherein each individual component of Operating and Maintenance (O&M) Cost is updated using a specialized index. Then, the cost components are re-aggregated into a revised O&M Cost, which more accurately reflects the actual cost than would escalation by a single gross factor. The report covers full load and half load operating costs for most common 60 HZ and 400 HZ Gasoline Engine		

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20. Driven (GED) Generator Sets, and also those for common 60 HZ Diesel Engine Driven (DED) Generator Sets. The escalation factor for 400 HZ DED Generator Sets is assumed to be the same as that for corresponding 60 HZ DED Generator Sets, using the previous TROSCOM Tech Report 74-12. The complete statement of methodology is included which allows the analysis to be adapted by the user to fit the specific time period desired. The Generator Sets referenced in this Tech Report are used to support various types of equipment, which means that the cost escalation factors provided should be of value in determining O&M Cost for generators used in a variety of applications. ↗

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9 Final rept. FY75-FY78,

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COSTS FOR FIELD GENERATOR SETS.

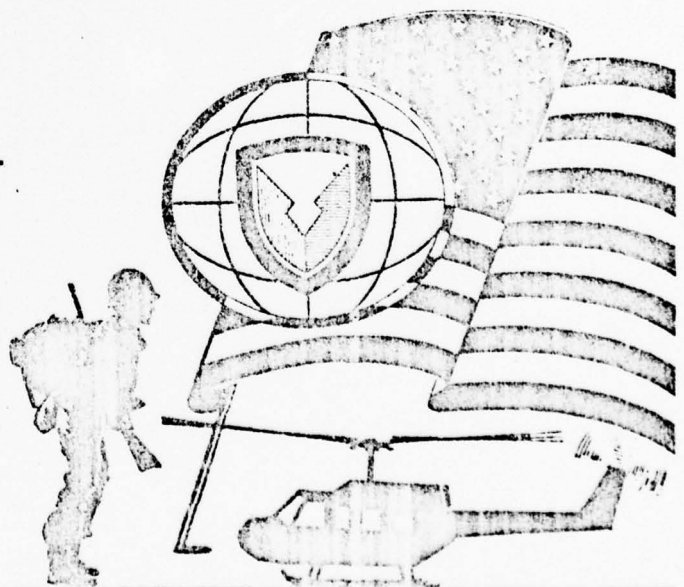
(REFERENCE TROSCOM TECHNICAL REPORT 74-12)

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WARREN H. GILLE, JR

11 JULY 1978

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U.S. ARMY TROOP SUPPORT
AND AVIATION MATERIEL
READINESS COMMAND
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DISCLAIMER STATEMENT

The findings of this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

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Calculation of Subindices for Cost
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Sample Calculation: A1-A2
Weighting Factors for Contribution
to Cost.

OPERATING COST INDEX FOR GENERATORS

Inclosed are the essentials for computing Operating Cost Indices for particular gasoline and diesel powered generators. Computation of the appropriate index involves three steps:

(The Operating Cost Equation is specified in Part One).

1. Obtain the proper relative weighting factors for the generator of interest in Part Two.
2. Obtain the appropriate values for the relevant cost indices in Part Three.
3. Put values into the Operating Cost Equation and compute the Operating Cost Index.

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Date <u>15 June 78</u>	

Warren Gille
Warren Gille
Economist - DRSTS-CCA
TSARCOM Inflation
Focal Point

PART ONE:

OPERATING COST INDEX EQUATION

COMPUTATION OF OPERATING COST INDEX FOR GENERATORS:

$$\begin{aligned} \text{OPERATING COST INDEX} = & \\ & (\% \text{ OF OPERATING COST ATTRIBUTABLE TO POL}) \times (\text{POL INDEX}) + \\ & (\% \text{ OF COST ATTRIBUTABLE TO PARTS}) \times (\text{PARTS INDEX}) + \\ & (\% \text{ OF COST ATTRIBUTABLE TO MAINTENANCE}) \times (\text{MAINTENANCE INDEX}) + \\ & (\% \text{ OF COST ATTRIBUTABLE TO OVERHAUL}) \times (\text{OVERHAUL INDEX}) \end{aligned}$$

THAT IS, THE OPERATING COST INDEX IS A WEIGHTED SUM OF THE INDEXES FOR THE FOUR

COMPONENTS OF OPERATING COST:

- 1) POL Index
- 2) Parts Index
- 3) Maint. Index
- 4) Overhaul Index

PART TWO:

RELATIVE CONTRIBUTION TO OPERATING COST: (RELATIVE WEIGHTS.)

GASOLINE DRIVEN
RELATIVE WEIGHTING FACTORS FOR OPERATING COST ELEMENTS

	<u>60 HZ</u>				<u>400 HZ</u>			
<u>KW</u> <u>HR/YR</u>	<u>1.5</u> <u>1000</u>	<u>3</u> <u>1000</u>	<u>5</u> <u>1000</u>	<u>10</u> <u>1000</u>	<u>KW</u> <u>HR/YR</u>	<u>3</u> <u>1000</u>	<u>5</u> <u>1000</u>	<u>10</u> <u>1000</u>
POL	23.4%	32.1%	36.5%	49.3%		33.9%	36.6%	52.2%
PARTS	25.1%	21.3%	16.1%	12.4%		20.6%	16.4%	11.1%
MAINT	30.4%	25.8%	28.9%	21.5%		24.9%	28.4%	21.6%
OVERHAUL	21.1%	20.8%	18.5%	16.8%		20.6%	18.6%	15.1%
	100%	100%	100%	100%		100%	100%	100%

DIESEL DRIVEN
RELATIVE WEIGHTING FACTORS FOR OPERATING COST ELEMENTS

60 HERTZ DIESEL									
KW HR/YR	5	10	15	30	KW HR/YR	60	100	150	200
	1000	1000	1200	1300		1500	2000	1000	1000
POL	18.8%	27.1%	25.8%	39.8%		54.6%	61.9%	73.0%	74.8%
PARTS	21.3%	20.2%	23.2%	18.6%		14.2%	11.4%	8.5%	6.6%
MAINT	28.5%	22.6%	15.8%	12.0%		10.5%	7.1%	5.6%	4.4%
OVERHAUL	31.4%	30.1%	35.2%	29.6%		20.7%	19.6%	12.9%	14.2%
	100%	100%	100%	100%		100%	100%	100%	100%

PART THREE:

COST INDEXES FOR OPERATING COST COMPONENTS

COMPUTATION OF INDICES

POL Index
(Gasoline)

=

(Fuel Cost */gal) Ref. Year

(.381 /gal) FY 1975

POL Index
(Diesel)

=

(Fuel Cost */gal) Ref. Year

(.339 /gal) FY 1975

* Bulk Prices, as listed in DFSC Bulletin, FY 1975: (Bulletin 74-4 dated 25 October 1974)

(1.08 Factor for Oils/Lubricants cancels up on Division)

Maintenance
Cost Escalation
Factor

=

(E4 Yearly Salary) Ref. Year

(\$6,875) FY 1975

(Other factors cancel see Formula p.20 of TROSCOM Tech Report 74-12, January 1975)

OVERHAUL AND PARTS COST INDEXES:

Overhaul cost is a percentage of acquisition cost:

Therefore:

Overhaul Cost Index	(Elect. Machinery Factor 11-7) FY 1975
=	
	(Elect. Machinery Factor 11-7) Ref Year

Also:

Parts Cost Index	(Electrical Machinery Factor 11-7) FY 1975
=	
	(Electrical Machinery Factor 11-7) Ref Year

= See list of factors (11-7) Attached. =

FY 1975 is the basis for the cost figures listed in the referenced report:

TROSCOM Tech. Report 74-12, Cost Estimating Relationships for Operating Costs of Mobile Electric Power Generating Sets, January 1975.

Reference Year is the FY to which the original FY75 cost is to be updated.

WHOLESALE PRICE INDICES

The following Wholesale Price Indices should be used for the TROSCOM

PEMA items to update prices from past contract prices:

Wholesale Price Index Title

TROSCOM PEMA Item

Rubber and Plastics Products 07

Heating Equipment 18

Fabricated Structural Metal Products 10-7

Collapsible Tanks

Air Conditioners

Heaters

AVL Bridge (Not including
Tank chassis)

Tanks

Other Bridges

Machinery and Equipment 11

Power Plant (MUST)

Firefighting Equipment

Forklift Trucks

Construction Machinery and Equipment 11-2

Pumps

Compressors

General Purpose Machinery and Equipment 11-4

Watercraft

Special Industry Machinery and Equipment 11-6

Theodolites

Tape Equipment

Surveying Instruments

Electrical Machinery and Equipment 11-7

Generators

Light Sets

Utility Elements

Railroad Equipment 14-4

Railroad Equipment

Industrial Commodities

All other items not listed
above.

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TROOP SUPPORT ITEMS

WHOLESALE PRICE INDICES HISTORICAL MULTIPLE FACTORS **

FY	(11-6) Special Industrial Mach & Equip	(11-7) Electrical Machinery & Equipment	(14) Transportation Equipment	(14-1) Moto Vehicles & Equip	(14-4) Railroad Equipment
1967	2.021	1.537	-	1.023	2.238
1968	1.937	1.516	-	1.486	2.268
1969	1.847	1.492	-	1.549	2.152
1970	1.758	1.458	1.545	1.514	2.038
1971	1.577	1.404	1.468	1.434	1.948
1972	1.620	1.385	1.411	1.378	1.840
1973	1.577	1.370	1.387	1.359	1.741
1974	1.443	1.315	1.345	1.320	1.611
1975	1.198	1.123	1.173	1.162	1.218
1976/77	1.082	1.056	1.076	1.072	1.090
1977	1.000	1.000	1.000	1.000	1.000

To move from FY77 to FY78, multiply FY77 cost figure by 1.07. This figure is an estimate based on current Wholesale Price Index data. This estimate will be superceded by fact when the complete data series is available for FY78.

SAMPLE COMPUTATIONS

COMPUTATION OF OPERATING COST
INDEX FOR GASOLINE GENERATORS.
INDEX: 1975 to 1978

GASOLINE GENERATORS

60 Hertz

400 Hertz

12

1.5Kw
1000

3Kw
1000

5Kw
1000

10Kw
1000

3Kw
1000

5Kw
1000

10Kw
1000

Half Load Operating
Cost/1000 Hours
FY 1975

FY 1978 COST SUMMARY

FY 1978 Cost

1442

1668

2195

2863

1723

2239

2805

Half Load Operating
Cost per year FY 1975

FY 1978 COST SUMMARY

FY 1978 Cost

1442

1668

2195

2863

1723

2239

2805

GASOLINE GENERATORS60 Hertz400 Hertz

<u>1.5Kw</u> 1000	<u>3Kw</u> 1000	<u>5Kw</u> 1000	<u>10Kw</u> 1000	<u>3Kw</u> 1000	<u>5Kw</u> 1000	<u>10Kw</u> 1000
\$1112	\$1275	\$1659	\$2133	\$1313	\$1692	\$2081

Half Load Operating
Cost/1000 Hours
FY 1975

<u>1.297</u>	<u>1.308</u>	<u>1.323</u>	<u>1.342</u>	<u>1.312</u>	<u>1.323</u>	<u>1.348</u>
--------------	--------------	--------------	--------------	--------------	--------------	--------------

Inflation Index X

<u>1442</u>	<u>1668</u>	<u>2195</u>	<u>2863</u>	<u>1723</u>	<u>2239</u>	<u>2805</u>
-------------	-------------	-------------	-------------	-------------	-------------	-------------

FY 1978 Cost

Half Load Operating
Cost per year FY 1975

\$1112	\$1275	\$1659	\$2133	\$1313	\$1692	\$2081
--------	--------	--------	--------	--------	--------	--------

<u>1.297</u>	<u>1.308</u>	<u>1.323</u>	<u>1.342</u>	<u>1.312</u>	<u>1.323</u>	<u>1.348</u>
--------------	--------------	--------------	--------------	--------------	--------------	--------------

Inflation Index X

<u>1442</u>	<u>1668</u>	<u>2195</u>	<u>2863</u>	<u>1723</u>	<u>2239</u>	<u>2805</u>
-------------	-------------	-------------	-------------	-------------	-------------	-------------

FY 1978 Cost

GASOLINE GENERATORS60 Hertz400 Hertz

$$\frac{1.5Kw}{1000}$$

$$\frac{3Kw}{1000}$$

$$\frac{5Kw}{1000}$$

$$\frac{10Kw}{1000}$$

$$\frac{3Kw}{1000}$$

$$\frac{5Kw}{1000}$$

$$\frac{10Kw}{1000}$$

Full Load Operating
Cost, \$ Per Kw-Hour

FY 1978 COST SUMMARY

FY 1978 Cost

$$\frac{1.034}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.615}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.493}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.336}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.639}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.503}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.332}{\underline{\underline{\hspace{1cm}}}}$$

Half Load Operating
Cost, \$ Per Kw-Hour

FY 1978 COST SUMMARY

FY 1978 Cost

$$\frac{2.062}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{1.112}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.879}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.573}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{1.145}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.896}{\underline{\underline{\hspace{1cm}}}}$$

$$\frac{.562}{\underline{\underline{\hspace{1cm}}}}$$

GASOLINE GENERATORS

15

60 Hertz

400 Hertz

	<u>1.5Kw</u> 1000	<u>3Kw</u> 1000	<u>5Kw</u> 1000	<u>10Kw</u> 1000	<u>3Kw</u> 1000	<u>5Kw</u> 1000	<u>10Kw</u> 1000
Full Load Operating Cost, \$ Per Kw-Hour	.797	.470	.373	.250	.487	.380	.246
Inflation Index X	<u>1.297</u>	<u>1.308</u>	<u>1.323</u>	<u>1.342</u>	<u>1.312</u>	<u>1.323</u>	<u>1.348</u>
FY 1978 Cost	<u>1.034</u>	<u>.615</u>	<u>.493</u>	<u>.336</u>	<u>.639</u>	<u>.503</u>	<u>.332</u>

Half Load Operating Cost, \$ Per Kw-Hour

	1.59	.850	.664	.427	.873	.677	.417
Inflation Index X	<u>1.297</u>	<u>1.308</u>	<u>1.323</u>	<u>1.342</u>	<u>1.312</u>	<u>1.323</u>	<u>1.348</u>
FY 1978 Cost	<u>2.062</u>	<u>1.112</u>	<u>.879</u>	<u>.573</u>	<u>1.145</u>	<u>.896</u>	<u>.562</u>

COMPUTATION OF OPERATING COST
INDEX FOR GASOLINE GENERATORS
INDEX: 1975 to 1978

1.5KW	60Hz	Generator
-------	------	-----------

	Weight		Index		
POL	23.4%	x	1.425	=	.334
Parts	25.1%	x	1.202	=	.302
Maint.	30.4%	x	1.338	=	.407
Overhaul	21.1%	x	1.202	=	.254
	<u>100%</u>				<u>1.297</u>

3KW	60Hz	Generator
-----	------	-----------

POL	32.1%	x	1.425	=	.457
Parts	21.3%	x	1.202	=	.256
Maint.	25.8%	x	1.338	=	.345
Overhaul	20.8%	x	1.202	=	.250
	<u>100%</u>				<u>1.308</u>

5KW	60Hz	Generator
-----	------	-----------

POL	36.5%	x	1.425	=	.520
Parts	16.1%	x	1.202	=	.194
Maint.	28.9%	x	1.338	=	.387
Overhaul	18.5%	x	1.202	=	.222
	<u>100%</u>				<u>1.323</u>

COMPUTATION OF OPERATING COST
INDEX FOR GASOLINE GENERATORS
INDEX: 1975 to 1978

10KW	60Hz	Generator
------	------	-----------

	Weight		Index		
POL	49.3%	x	1.425	=	.703
Parts	12.4%	x	1.202	=	.149
Maint.	21.5%	x	1.338	=	.288
Overhaul	16.8%	x	1.202	=	.202
	<u>100%</u>				<u>1.342</u>

3KW	400Hz	Generator
-----	-------	-----------

POL	33.9%	x	1.425	=	.483
Parts	20.6%	x	1.202	=	.248
Maint.	24.9%	x	1.338	=	.333
Overhaul	20.6%	x	1.202	=	.248
	<u>100%</u>				<u>1.312</u>

5KW	400Hz	Generator
-----	-------	-----------

POL	36.6%	x	1.425	=	.522
Parts	16.4%	x	1.202	=	.197
Maint.	28.4%	x	1.338	=	.380
Overhaul	18.6%	x	1.202	=	.224
	<u>100%</u>				<u>1.323</u>

COMPUTATION OF OPERATING COST
INDEX FOR GASOLINE GENERATORS
INDEX: 1975 to 1978

10KW 400Hz		Generator			
	Weight		Index		
POL	52.2%	x	1.425	=	.744
Parts	11.1%	x	1.202	=	.133
Maint.	21.6%	x	1.338	=	.289
Overhaul	15.1%	x	1.202	=	.182
	<u>100%</u>				<u>1.348</u>

INDICES FOR FY 75 - FY 78 GENERATOR O&MA INDEX CALCULATION

1. POL Index

✓ a. Gasoline Generator = $\frac{.543/\text{gal}}{.381/\text{gal}}$
 (Bulk: FSN 9130-00-264-6218) = 1.425

b. Diesel Generator = $\frac{.441/\text{gal}}{.338/\text{gal}}$
 (Bulk: FSN 9140-00-286-5294) = 1.305

Source DFSC Fuel Supply Bulletin 77-1 verified as accurate with Cameron Station, DFSC Depot, 11 July 1978.

2. Parts Index = $\frac{1.123}{1.000} \times (1.07)$

(1975 to 1977 based
 on Wholesale Price
 Index Code 11-7 Electrical
 Machinery)

1977 to 1978
 (OSD Indices
 28 Dec 77
 O&MA)

= 1.202

3. Maintenance Index = $\frac{E4 \ 1978}{E4 \ 1975}$

= $\frac{9,199}{6,875} = \text{1.338}$

4. Overhaul Index = $\frac{(1.123)}{(1.000)} \times (1.07)$

(1975 to 1977 based
 on Wholesale Price
 (Now called Producer
 Price) Index, Dept of
 Labor, Code 11-7
 Electrical Machinery)

OSD Factor
 (1977 to 1978
 28 Dec 77
 Indices O&MA)

= 1.202

SAMPLE COMPUTATIONS

COMPUTATION OF OPERATING COST
INDEX FOR DIESEL GENERATORS.
INDEX: 1975 to 1978

DIESEL GENERATORS

5Kw	10Kw	15Kw	30Kw	60Kw	100Kw	150Kw	200Kw
1000	1000	1200	1300	1500	2000	1000	1000

Half Load Operating
Cost per 1000 Hours
FY 1975

FY 1978 COST SUMMARY

FY 1978 Cost

1398

1740

2456

3072

4278

6147

7551

9747

Half Load Operating
Cost per year

FY 1978 COST SUMMARY

FY 1978 Cost

1398

1740

2935

3993

6417

12293

7551

9747

DIESEL GENERATORS

60 HERTZ DIESEL

22

Half Load Operating Cost per 1000 Hours FY 1975	<u>5Kw</u> 1000	<u>10Kw</u> 1000	<u>15Kw</u> 1200	<u>30Kw</u> 1300	<u>60Kw</u> 1500	<u>100Kw</u> 2000	<u>150Kw</u> 1000	<u>200Kw</u> 1000
	\$1110	\$1380	\$1965	\$2438	\$3358	\$4817	\$5876	\$7585
Inflation Index	X							
	<u>1.259</u>	<u>1.261</u>	<u>1.250</u>	<u>1.260</u>	<u>1.274</u>	<u>1.276</u>	<u>1.285</u>	<u>1.285</u>
FY 1978 Cost	<u>1398</u>	<u>1740</u>	<u>2456</u>	<u>3072</u>	<u>4278</u>	<u>6147</u>	<u>7551</u>	<u>9747</u>

Half Load Operating Cost per year	<u>\$1110</u>	<u>\$1380</u>	<u>\$2348</u>	<u>\$3169</u>	<u>\$5037</u>	<u>\$9634</u>	<u>\$5876</u>	<u>\$7585</u>
Inflation Index	X							
	<u>1.259</u>	<u>1.261</u>	<u>1.250</u>	<u>1.260</u>	<u>1.274</u>	<u>1.276</u>	<u>1.285</u>	<u>1.285</u>
FY 1978 Cost	<u>1398</u>	<u>1740</u>	<u>2935</u>	<u>3993</u>	<u>6417</u>	<u>12293</u>	<u>7551</u>	<u>9747</u>

DIESEL GENERATORS

60 HERTZ DIESEL

23

<u>5Kw</u> 1000	<u>10Kw</u> 1000	<u>15Kw</u> 1200	<u>30Kw</u> 1300	<u>60Kw</u> 1500	<u>100Kw</u> 2000	<u>150Kw</u> 1000	<u>200Kw</u> 1000
--------------------	---------------------	---------------------	---------------------	---------------------	----------------------	----------------------	----------------------

Full Load Operating
Cost, \$ Per Kw-Hour

FY 1978 COST SUMMARY

FY 1978 Cost

.296

.189

.178

.116

.085

.075

.064

.063

Half Load Operating
Cost, \$ Per Kw-Hour

FY 1978 COST SUMMARY

FY 1978 Cost

.559

.348

.328

.205

.143

.123

.100

.098

DIESEL GENERATORS

60 HERTZ DIESEL

24

	<u>5Kw</u> <u>1000</u>	<u>10Kw</u> <u>1000</u>	<u>15Kw</u> <u>1200</u>	<u>30Kw</u> <u>1300</u>	<u>60Kw</u> <u>1500</u>	<u>100Kw</u> <u>2000</u>	<u>150Kw</u> <u>1000</u>	<u>200Kw</u> <u>1000</u>
Full Load Operating Cost, \$ Per Kw-Hour	.235	.150	.142	.092	.067	.059	.050	.049
Inflation Index X	<u>1.259</u>	<u>1.261</u>	<u>1.250</u>	<u>1.260</u>	<u>1.274</u>	<u>1.276</u>	<u>1.285</u>	<u>1.285</u>
FY 1978 Cost	<u>.296</u>	<u>.189</u>	<u>.178</u>	<u>.116</u>	<u>.085</u>	<u>.075</u>	<u>.064</u>	<u>.063</u>
Half Load Operating Cost, \$ Per Kw-Hour	.444	.276	.262	.163	.112	.096	.078	.076
Inflation Index X	<u>1.259</u>	<u>1.261</u>	<u>1.250</u>	<u>1.260</u>	<u>1.274</u>	<u>1.276</u>	<u>1.285</u>	<u>1.285</u>
FY 1978 Cost	<u>.559</u>	<u>.348</u>	<u>.328</u>	<u>.205</u>	<u>.143</u>	<u>.123</u>	<u>.100</u>	<u>.098</u>

COMPUTATION OF OPERATING COST
INDEX FOR DIESEL GENERATORS
INDEX: 1975 to 1978

<u>5KW</u>	<u>Diesel</u>		<u>Generator</u>		
	Weight		Index		
POL	18.8%	x	1.305	=	.245
Parts	21.3%	x	1.202	=	.256
Maint.	28.5%	x	1.338	=	.381
Overhaul	31.4%	x	1.202	=	.377
	<u>100%</u>				<u><u>1.259</u></u>

<u>10KW</u>	<u>Diesel</u>		<u>Generator</u>		
POL	27.1%	x	1.305	=	.354
Parts	20.2%	x	1.202	=	.243
Maint.	22.6%	x	1.338	=	.302
Overhaul	30.1%	x	1.202	=	.362
	<u>100%</u>				<u><u>1.261</u></u>

<u>15KW</u>	<u>Diesel</u>		<u>Generator</u>		
POL	25.8%	x	1.305	=	.337
Parts	23.2%	x	1.202	=	.279
Maint.	15.8%	x	1.338	=	.211
Overhaul	35.2%	x	1.202	=	.423
	<u>100%</u>				<u><u>1.250</u></u>

COMPUTATION OF OPERATING COST
INDEX FOR DIESEL GENERATORS
INDEX: 1975 to 1978

<u>30KW</u>	<u>Diesel</u>		<u>Generator</u>		
	Weight		Index		
POL	39.8%	x	1.305	=	.519
Parts	18.6%	x	1.202	=	.224
Maint.	12.0%	x	1.338	=	.161
Overhaul	29.6%	x	1.202	=	.356
	<u>100%</u>				<u>1.260</u>

<u>60KW</u>	<u>Diesel</u>		<u>Generator</u>		
POL	54.6%	x	1.305	=	.713
Parts	14.2%	x	1.202	=	.171
Maint.	10.5%	x	1.338	=	.141
Overhaul	20.7%	x	1.202	=	.249
	<u>100%</u>				<u>1.274</u>

<u>100KW</u>	<u>Diesel</u>		<u>Generator</u>		
POL	61.9%	x	1.305	=	.808
Parts	11.4%	x	1.202	=	.137
Maint.	7.1%	x	1.338	=	.095
Overhaul	19.6%	x	1.202	=	.236
	<u>100%</u>				<u>1.276</u>

COMPUTATION OF OPERATING COST INDEX FOR DIESEL GENERATORS INDEX: 1975 to 1978

<u>150KW</u>	<u>Diesel</u>		<u>Generator</u>		
	Weight		Index		
POL	73.0%	x	1.305	=	.953
Parts	8.5%	x	1.202	=	.102
Maint.	5.6%	x	1.338	=	.075
Overhaul	12.9%	x	1.202	=	.155
	<u>100.0%</u>				<u><u>1.285</u></u>

<u>200KW</u>	<u>Diesel</u>		<u>Generator</u>		
POL	74.8%	x	1.305	=	.976
Parts	6.6%	x	1.202	=	.079
Maint.	4.4%	x	1.338	=	.059
Overhaul	14.2%	x	1.202	=	.171
	<u>100.0%</u>				<u><u>1.285</u></u>

INDICES FOR FY 75 - FY 78 GENERATOR O&MA INDEX CALCULATION

1. POL Index

a. Gasoline Generator = $\frac{.543/\text{gal}}{.331/\text{gal}}$
 (Bulk: FSN 9130-00-264-6218)

= 1.425

✓ b. Diesel Generator = $\frac{.441/\text{gal}}{.338/\text{gal}}$
 (Bulk: FSN 9140-00-286-5294)

= 1.305

Source DFSC Fuel Supply Bulletin 77-1 verified as accurate with
 Cameron Station, DFSC Depot, 11 July 1978.

2. Parts Index = $\frac{1.123}{1.000} \times (1.07)$

(1975 to 1977 based
 on Wholesale Price
 Index Code 11-7 Electrical
 Machinery)

1977 to 1978
 (OSD Indices
 28 Dec 77
 O&MA)

= 1.202

3. Maintenance Index = $\frac{E4 \ 1978}{E4 \ 1975}$

= $\frac{9,199}{6,875} = 1.338$

4. Overhaul Index = $\frac{(1.123)}{(1.000)} \times (1.07)$

(1975 to 1977 based
 on Wholesale Price
 (Now called Producer
 Price) Index, Dept of
 Labor, Code 11-7
 Electrical Machinery)

OSD Factor
 (1977 to 1978
 28 Dec 77
 Indices O&MA)

= 1.202

APPENDIX A

CALCULATION OF WEIGHTING FACTORS

(PERCENT OF COST ATTRIBUTABLE TO A COST ITEM, SUCH AS POL)

EXAMPLE: GASOLINE GENERATOR

1.5 KW

1000 HOUR YEAR

(REFERENCE COL. 1, P. 17, TROSCOM TECH REPORT 74-12)

POL, AS A PERCENTAGE OF ACQUISITION COST (FUEL, OIL, AND LUBRICANT COST)	16.7%
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PARTS, AS A PERCENTAGE OF ACQUISITION COST	17.9%
--	-------

MAINTENANCE, AS A PERCENTAGE OF ACQUISITION COST	21.7%
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OVERHAUL COST, AS A PERCENTAGE OF ACQUISITION COST	15.0%
---	-------

71.3%

BECAUSE ORIGINAL ACQUISITION COST IS FIXED (A CONSTANT),
CALCULATION OF PERCENTAGE CONTRIBUTION TO COST (WEIGHTS)
IS A SIMPLE RATIO AND PROPORTION PROBLEM:

$$\text{PERCENT CONTRIBUTION OF POL} = (16.7)/(71.3) = 23.4 \%$$

$$\text{PERCENT CONTRIBUTION OF PARTS} = (17.9)/(71.3) = 25.1 \%$$

$$\text{PERCENT CONTRIBUTION OF MAINT.} = (21.7)/(71.3) = 30.4 \%$$

$$\text{PERCENT CONTRIBUTION OF OVRHL.} = (15.0)/(71.3) = 21.1 \%$$

$$100.0 \%$$

THESE FACTORS, AND THE OTHER WEIGHTING FACTORS, ARE DISPLAYED
IN THE TABLES ON PAGE (5) .